



U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Pesticide Programs
Registration Division (7505P)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

EPA Reg. Number:

96727-1

Date of Issuance:

10/22/20

NOTICE OF PESTICIDE:

☒ Registration
☐ Reregistration
(under FIFRA, as amended)

Term of Issuance:

Unconditional

Name of Pesticide Product:

Longhorn

Name and Address of Registrant (include ZIP Code):

Heritage Crop Science, LLC
9676 S. McCall Avenue
Selma, CA 93662

John F. Wright
Authorized Agent of Heritage Life Science, LLC
c/o Product & Regulatory Associates, LLC
8595 Collier Blvd. Suite 107-51
Naples, FL 34114

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you:

1. Submit and/or cite all data required for registration/reregistration/registration review of your product when the Agency requires all registrants of similar products to submit such data.

Signature of Approving Official:

Lindsay Roe, Product Manager 22
Fungicide Branch, Registration Division (7505P)

Date:

10/22/20

2. Make the following label changes before you release the product for shipment:
 - Revise the EPA Registration Number to read, “EPA Reg. No. 96727-1.”
3. Submit one copy of the revised final printed label for the record before you release the product for shipment.

Should you wish to add/retain a reference to the company’s website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA’s Office of Enforcement and Compliance.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6. Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records. Please also note that the record for this product currently contains the following CSFs:

- Basic CSF dated 08/05/2020

If you have any questions, please contact Lindsay Roe by phone at 703 347-0506, or via email at roe.lindsay@epa.gov; or Yasmin Bowers by phone at 703 347-8634, or via email at bowers.yasmin@epa.gov.

Enclosure

RESTRICTED USE PESTICIDE

Due to substantial eye injury and skin irritation. For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's Certification.

ACCEPTED

Oct 22, 2020

Under the Federal Insecticide, Fungicide
and Rodenticide Act as amended, for the
pesticide registered under
EPA Reg. No. 96727-1

Not for sale or use after
[insert 6 months after date
of formulation]

Longhorn™**A growth regulator for stimulating uniform budbreak****ACTIVE INGREDIENT:**

Hydrogen Cyanamide: 50.0%

OTHER INGREDIENTS:..... 50.0%**TOTAL:** 100.0%

Contains 4.55 lbs. active ingredient per gallon.

KEEP OUT OF REACH OF CHILDREN**WARNING - AVISO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.

(If you do not understand this label, find someone to explain it to you in detail).

FIRST AID

If in eyes:	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled:	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth, if possible. • Call a poison control center or doctor for further treatment advice.
If swallowed:	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information.	
NOTE TO PHYSICIAN	
Immediate lavage of stomach. Hydrogen cyanamide is not hydrogen cyanide and does not degrade to hydrogen cyanide. Do not induce vomiting or give anything by mouth to an unconscious person.	

EPA Reg. No. 96727-R

EPA Est. No.

[Distributed] [by:] [Manufactured] [for:]

Heritage Crop Science, LLC

9676 S. McCall Avenue

Selma, CA 93662

Net Contents:

[See inside booklet for additional Precautionary Statements and complete Directions for Use.]

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
WARNING**

Causes substantial but temporary eye injury. Causes skin irritation. May be fatal if swallowed or if absorbed through skin. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT

Some materials that are chemical-resistant to this product are listed below.

Mixers and loaders using the required closed system must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant apron
- Chemical-resistant gloves such as Barrier laminate, or Butyl rubber \geq 14 mils, or Nitrile Rubber \geq 14 mils, or Neoprene Rubber \geq 14 mils, or Polyvinyl Chloride (PVC) \geq 14 mils, or Viton \geq 14 mils, or Natural Rubber \geq 14 mils, or Polyethylene
- Protective eyewear – persons who mix, load or transfer must wear goggles. A full-faced respirator may be substituted for goggles.

All handlers cleaning equipment must wear:

- Chemical-resistant gloves such as Barrier laminate, or Butyl rubber \geq 14 mils, or Nitrile Rubber \geq 14 mils, or Neoprene Rubber, \geq 14 mils, or Polyvinyl Chloride (PVC) \geq 14 mils, or Viton \geq 14 mils, or Natural Rubber \geq 14 mils, or Polyethylene
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant protective suit
- A NIOSH approved particulate respirator with any N, R, or P filter, NIOSH approval prefix TC-84A; or a NIOSH-approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21-C

Applicators using the required enclosed cab must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

Applicators using the required enclosed cabs must have the following equipment immediately available and stored in a chemical-resistant container, such as a plastic bag. The following must be worn if it is necessary to exit the cab and contact pesticide treated surfaces in the treated area, and must be removed and stored in a chemical-resistant container before reentering the cab:

- Chemical-resistant protective suit
- Chemical-resistant gloves such as Barrier laminate, or Butyl rubber \geq 14 mils, or Nitrile Rubber \geq 14 mils, or Neoprene Rubber, \geq 14 mils, or Polyvinyl Chloride (PVC) \geq 14 mils, or Viton \geq 14 mils, or Natural Rubber \geq 14 mils, or Polyethylene
- Chemical-resistant footwear plus socks
- A NIOSH approved particulate respirator with any N, R, or P filter, NIOSH approval prefix TC-84A; or a NIOSH-approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21-C
- Protective eyewear

User Safety Requirements:

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining

PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Wash PPE after each day's use.

Do not consume alcoholic beverages prior to, during, or for 24 hours after handling this product.

ENGINEERING CONTROLS STATEMENT

Closed Systems: This product must be mixed, loaded, and transferred only in a closed system.

Closed Systems and Enclosed Cab Requirements (if applicable): This product must be applied only with the applicator in an enclosed cab. When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment break-down.

The operating pressure of the spray rig shall be no more than 40 psi with the use of low pressure nozzles on dilute boom sprays and no more than 100 psi on air fan sprayers. Air fan sprayers should have the fan adjusted so that the spray mist does not greatly exceed the top of vines being sprayed.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately, if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.
- Avoid contact with spray contaminated surfaces.

ENVIRONMENTAL HAZARDS

Do not apply this product to any area in which an endangered species has been identified or in such a manner that drift from applications of this product could result in destroying an endangered species. This limitation applies only to areas that have been identified by and are protected by State and Federal agencies. Do not apply closer than 300 yards to the mean high water mark for intertidal areas or closer than 300 yards to surface water. Do not apply to crops growing closer than 300 yards to rivers, streams, or their flowing tributaries. Do not contaminate water by the cleaning of equipment or disposal of equipment washwater or rinsate. Do not apply when weather conditions favor drift from treated areas or where runoff is likely to occur. Do not spray when bees are active in the field.

This chemical can contaminate surface water through ground spray applications. Under some conditions it may also have a high potential for runoff into surface water after application. These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, areas overlaying extremely shallow ground water, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters by vegetated filter strips, and areas overlaying tile drainage systems that drain to surface water. This pesticide is highly toxic to freshwater invertebrates and moderately toxic to birds and mammals. Drift and runoff may be hazardous to aquatic organisms in neighboring areas.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers or protected supervisors may be in the area during application. During the application, no person shall be within 125 feet of the area to be treated unless involved in application or mix/load

operations. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation. This label must be in possession of the user at the time of Longhorn™ application.

Do not apply this product through any type of irrigation system. Aerial application of Longhorn™ is prohibited.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), notification to workers, and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Chemical-resistant protective suit
- Chemical resistant gloves such as barrier laminate, or butyl rubber ≥ 14 mils, or nitrile rubber ≥ 14 mils, or neoprene rubber ≥ 14 mils or polyvinyl chloride (PVC) ≥ 14 mils, or viton ≥ 14 mils or natural rubber ≥ 14 mils, or polyethylene
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.

Longhorn™ is a plant growth regulator that will stimulate more uniform budbreak on listed deciduous plants. More uniform budbreak will occur in plants that have received their full chill hour requirement or somewhat less than their full dormancy. More uniform budbreak in the spring promotes more uniform flowering and more uniform maturity at harvest. The directions provided below provide instructions on how to achieve these benefits and to avoid possible difficulties with the use of Longhorn™.

EQUIPMENT CONTAMINATION – Thoroughly clean spray equipment used for Longhorn™ application of residual spray materials. Residual spray in the tank or sprayer plumbing may react with Longhorn™ potentially reducing the effective concentration of Longhorn™. Sprays containing metal ions, especially copper, will form a black insoluble salt that will coat the sprayer and be difficult to remove. This will reduce the available active ingredient concentration of Longhorn™.

DORMANT SPRAY EFFECTIVENESS – Do not spray Longhorn™ within 30 days after application of early dormant sprays containing copper or the effect of the copper spray may be reduced.

DORMANT SPRAYS CONTAINING OIL – Do not apply dormant sprays containing oil within 14 days before or after application of Longhorn™ (delayed Longhorn™ applications are recommended). Some new wood dieback may result if oil is applied sooner than this interval. When oil and copper spray mixtures must be used for insect and/or disease control, apply Longhorn™ 30 or more days before normal budbreak and the oil and/or copper spray should be made as a delayed dormant spray, which coincides with early budbreak. This practice will give three or more weeks separation.

COVER CROPS – When spraying Longhorn™ in areas of vineyards or orchards with cover crops, injury may occur from spray applications to the target crop. This injury is usually temporary, but some crops may be sensitive and defoliate. If there is concern about the cover crop, spray a small area over the cover crop to test the plant sensitivity to Longhorn™ using the intended surfactant.

POTENTIAL CROP LOSS – Longhorn™ drift to crops that are in bloom may completely remove or damage all of the flowers, resulting in complete crop loss. When spraying close to susceptible crops, such as lemons, crops in bloom, and sensitive foliage, use a buffer zone. Extreme care must be used to

avoid contact of the spray or drift with foliage, green stems, or fruit of desirable crops as severe damage and crop loss may result.

SPRAY DRIFT – Avoid spraying under conditions of a temperature inversion when drift hazard is increased. Coarse sprays, as defined by the ASABE S572.1 must be used in Longhorn applications. Do not use nozzles or nozzle configurations which generate fine spray droplets. Do not increase spray volume by increasing nozzle pressure because this will increase the number of fine droplets in the spray. It is important to understand that the responsibility for control of spray drift is with the person making the use recommendation, the applicator and the grower.

To limit drift, use a coarse droplet nozzle pressure not to exceed 40 psi for dilute boom sprayers and 100 psi for air fan sprayers, and spray only to wet. Do not exceed 4 gallons per acre of Longhorn™ per application and make only one application per crop cycle. Do not tank mix with other materials except as listed on this label. If applied less than 30 days (35 to 40 days for apples) prior to natural budbreak, yield may be reduced. Use the minimum spray volume to achieve adequate wetting of all buds. Do not use concentrate spray.

Ethylene gas may be formed through the use of Longhorn™. When Longhorn™ is applied to grapes growing close to certain lemon varieties, the ethylene gas may result in some leaf drop in lemon leaves. This defoliation is characterized by the leaf lamina falling off leaving the leaf petiole still attached to the stem. Application of lime at a rate of 125 lbs. in 250-300 gals. water per acre (having a high pH, i.e. 10+), applied 2 to 24 hours after Longhorn™ application, may result in reduced formation of ethylene gas.

Do not use Longhorn™ as a blossom thinner as the outcome of such use is unpredictable.

FROST OCCURRENCE ADVISORY – For earlier than normal budbreak, make the application sooner than 30 days prior to normal budbreak. However, growing buds and shoots are susceptible to frost and may be killed or damaged by freezing temperatures. Following application of Longhorn™, some yellowing on the first leaves may appear but developing growth will be normal.

DORMANCY REQUIREMENTS – To promote maximum effectiveness of Longhorn™ and to avoid phytotoxicity (i.e., new wood dieback, blossom thinning), deciduous crops must be completely dormant. Longhorn™ is not a substitute for lack of a normal dormancy. Monitor dormancy by monitoring chill hour accumulations. Negative chill hour accumulation climatologically induced incomplete dormancy must be considered, both to promote the effectiveness of Longhorn™ at the recommended application rates and to avoid phytotoxicity.

ENVIRONMENTAL AND DISEASE STRESS – Plants grown in heavy soils, or in other soils affected by poor drainage, or soil borne diseases, such as phytophthora root rot, may die back as a result of treatment with Longhorn™. This is because of increased uniform budbreak and the inability of the plant to sustain growth. Plants usually appear healthy and begin to grow normally, then collapse. Plants designated for treatment with Longhorn™ need a healthy, viable root system.

SPRAY EQUIPMENT CALIBRATION – It is critical that equipment be calibrated, especially speed sprayers, for the row spacing to be treated. Double spraying and excessive drift through the vineyard/orchard will result in phytotoxicity. Always calibrate speed sprayers according to manufacturer's instructions.

CROP APPLICATION INSTRUCTIONS

APPLES – A more uniform budbreak in apples can be promoted by applying 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) in up to 200 gallons of spray per acre, with up to 0.5% v/v nonionic surfactant. Apply after all pruning activities have been completed, and 30 days before normal budswell or 35 days before normal budbreak. In orchards having more than one variety, spray according to anticipated budbreak timing of the earliest variety, unless each variety can be sprayed separately without significant drift or overspray contacting previously sprayed varieties or nontarget varieties. When budbreak begins to occur, the bloom period can be compressed to a few days depending upon the weather. In order to ensure adequate pollination, a sufficient number of beehives of suitable strength must be set in the orchard before first blossom activity is observed. When bee activity is limited, artificial pollination is advised. Increased budbreak uniformity will also facilitate chemical thinning of fruit and promote greater uniformity of fruit maturity at harvest.

Longhorn™ is a budbreak stimulant and will promote more uniform normal and/or earlier budbreak even when the maximum chill hour requirements are met. Longhorn™ is not a substitute for chill hours, however, an application rate of 3.85 gallons per acre will stimulate more uniform bud emergence following a minimum amount of chilling (approximately 375-500 chill hours based on the threshold temperature of 43°F to 45°F).

USE RESTRICTIONS:

DO NOT exceed 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) per acre per application.

DO NOT apply more than 3.85 gallons of this product (17.52 lbs. hydrogen cyanamide) per acre per year.

DO NOT exceed 200 gallons of spray volume per acre.

Make only 1 application per year.

DO NOT tank mix with other ingredients except as listed above.

BLACKBERRIES (Not for use in California) - To promote more uniform budbreak apply 2.9 gallons of Longhorn™ (13.2 lbs. hydrogen cyanamide) in 50 to 100 gallons of spray per acre. Thoroughly wet all plants using 0.25 to 0.5% v/v of nonionic surfactant. Application should be made 30 days or more before normal budbreak and before new green growth appears. Budbreak and the rate of foliage and flower-development is increased by Longhorn™ even though full dormancy may not have been met. The more chill hours that can be accumulated, generally the better the bloom and fruit set. Since Longhorn™ typically advances budbreak, the risk of Spring freeze damage is increased.

NOTE: Longhorn™ has not been tested on all varieties, but the following varieties have shown good results: Arapaho, Navaho and Apache blackberries. If Longhorn™ is to be used on other varieties, small areas should be treated first to determine each variety's reaction to Longhorn™.

USE RESTRICTIONS:

DO NOT exceed 2.9 gallons of Longhorn™ (13.2 lbs. hydrogen cyanamide) per acre per application.

DO NOT apply more than 2.9 gallons of this product (13.2 lbs. hydrogen cyanamide) per acre per year.

DO NOT exceed 100 gallons of spray per acre.

Make only 1 application per year.

DO NOT tank mix with other ingredients except as listed above.

BLUEBERRIES – Use Longhorn™ to promote more uniform budbreak, particularly in areas of marginal chilling, to reduce the period of fruit disease susceptibility and to promote more uniform harvest. Apply Longhorn™ at a rate of 1.5-2.9 gallons (6.83 – 13.2 lbs. hydrogen cyanamide) in 50 to 100 gallons of spray per acre with a nonionic surfactant not to exceed 0.5% v/v made 30 or more days prior to natural budbreak. (Florida Only – use of Longhorn™ in Alachua County, Florida is restricted from the area west of route 441, except that north of the intersection of route 441 and 175, use is also restricted west of 175 because of possible effects on the Squirrel Chimney cave shrimp (*Palaemonetes cummingi*).

USE RESTRICTIONS:

DO NOT exceed 2.9 gallons of Longhorn™ (13.2 lbs. hydrogen cyanamide) per acre per application.

DO NOT apply more than 2.9 gallons of this product (13.2 lbs. hydrogen cyanamide) per acre per year.

DO NOT exceed 200 gallons of spray per acre.

Make only 1 application per year.

DO NOT tank mix with other ingredients except as listed above.

CHERRIES – Use Longhorn™ for more uniform natural budbreak, or for earlier budbreak, leading to more uniform normal maturity or earlier maturity. Apply 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) in not more than 200 gallons of spray per acre with a nonionic surfactant not to exceed 0.5% v/v after all pruning activities are complete. Do not use Longhorn™ on very large trees if sufficient spray coverage cannot be achieved at the 200 gallons spray per acre rate. Make applications 30 or more days prior to normal budbreak. Spray applications should be made according to the anticipated budbreak timing required by the earliest variety within an interplanted orchard, unless each variety can be sprayed separately without significant drift or over-spray contacting previously sprayed varieties or non-target varieties. Maintain fungicide/bactericide spray activities, including dormant sprays and protect bud growth as it occurs.

Following application of Longhorn™, when budbreak begins to occur, the bloom period can be compressed to a few days depending upon the weather. In order to ensure proper pollination, a sufficient number of beehives of suitable strength must be set in the orchard before first blossom activity is observed. When bee activity is limited, artificial pollination is advised.

Longhorn™ is a budbreak stimulant and will promote more uniform normal and/or earlier budbreak even when the maximum chill hour requirements are met. Longhorn™ is not a substitute for chill hours, however, an application rate of 3.85 gallons per acre will stimulate growth following a minimum amount of chilling (approximately 350-500 chill hours based on the threshold temperature of 43°F to 45°F).

USE RESTRICTIONS:

DO NOT exceed 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) per acre per application.

DO NOT apply more than 3.85 gallons of this product (17.52 lbs. hydrogen cyanamide) per acre per year.

DO NOT exceed 200 gallons of spray per acre.

Make only 1 application per year.

DO NOT tank mix with other ingredients except as listed above.

GRAPES – WINE AND RAISIN – Apply 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) spray in not more than 100 gallons per acre 30 or more days prior to normal natural budbreak to promote increased budbreak uniformity and more uniform harvest. Application will help overcome blind bud disorder on such wine varieties as Cabernet Sauvignon. Low vigor may not be able to support the amount of budbreak and shoot growth that occurs as a result of Longhorn™ use.

USE RESTRICTIONS:

DO NOT exceed 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) per acre per application.

DO NOT apply more than 3.85 gallons of this product (17.52 lbs. hydrogen cyanamide) per acre per year.

DO NOT exceed 100 gallons of spray per acre.

Make only 1 application per year.

DO NOT tank mix with other ingredients except as listed above.

DESERT GRAPES – For use in desert grown grapes in the California Counties of Imperial, Riverside and San Bernardino and in the Arizona Counties of Maricopa, Pinal and Yuma.

To promote uniform budbreak, apply 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) in 100 gallons of water with a nonionic surfactant not to exceed 0.5% v/v prior to budbreak after all pruning activities are completed, including tying of canes. Use a coarse droplet spray with nozzle pressure not to exceed 40 psi. Use the minimum number of spray nozzles to achieve adequate wetting. Three to four nozzles are usually sufficient.

Yield may be reduced if applied less than four weeks prior to natural budbreak.

For earlier than normal budbreak, make the application earlier than 4 weeks prior to normal budbreak but not later than January 31 and not before December 1. Some yellowing on the first leaves may appear but the developing growth will be normal. The user should be aware that growing buds and shoots are susceptible to frost and may be killed or damaged by freezing temperatures which should be taken into account in determining whether or not to make an early application of Longhorn™.

USE RESTRICTIONS:

DO NOT exceed 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) per acre per application.

DO NOT use more than 3.85 gallons Longhorn™ (17.52 lbs. hydrogen cyanamide) per acre per year.

DO NOT exceed 100 gallons of spray per acre.

Make only one application per year.

DO NOT tank mix with other materials except as listed above.

DO NOT apply Longhorn™ within 50 feet of the boundary of the Coachella Valley Preserve in order to avoid possible exposure to the endangered Coachella Valley fringe-toed lizard. This lizard is located in the vineyards located within the boundaries of the Coachella Valley Preserve.

NON-DESERT GRAPES – For use in California Counties of Kern, Tulare, Fresno and Madera

Apply Longhorn™ prior to budbreak after all pruning activities are completed, including tying of canes, to promote more uniform budbreak. Apply 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) in 100 gallons of water with a nonionic surfactant not to exceed 0.5% v/v. In order to achieve adequate wetting, use a coarse droplet spray with a nozzle pressure not to exceed 40 psi and a minimum number, usually three or four, of spray nozzles.

Yield reduction may occur if application is made less than four weeks prior to natural budbreak. For earlier than normal budbreak, apply Longhorn™ more than four weeks prior to normal budbreak, but only after January 1 and before February 28.

Developing growth will be normal, although some yellowing on the first leaves may occur. The user should be aware that growing buds and shoots are susceptible to frost and may be killed or damaged by freezing temperatures which should be taken into account in determining whether or not to make an early application of Longhorn™.

Longhorn™ should be applied as late as possible to permit maximum chill hour accumulation, but not later than 25 days before budbreak, in areas where chill hour accumulation is marginal. Best results are observed when Longhorn™ is applied after the vines have accumulated at least 50 hours of chilling.

USE RESTRICTIONS:

DO NOT exceed 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) per acre per application.

DO NOT use more than 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) per acre per year.

DO NOT exceed 100 gallons of total spray per acre.

Make only one application per year.

DO NOT tank mix with other materials except as listed above.

DO NOT apply Longhorn™ any earlier than 30 days prior to anticipated normal budbreak to low vigor and low capacity vines. Vines treated too soon risk reduced yield if conditions affecting growth following application are not favorable for a sustained period.

KIWI (California Only) – Apply Longhorn™ to promote more uniform natural budbreak or earlier budbreak particularly in areas of marginal chilling, to reduce the period of fruit susceptibility to disease, and to promote more uniform harvest. Apply 3.85 gallons (17.52 lbs. hydrogen cyanamide) in 100 gallons of spray per acre. This application will also reduce the cane's susceptibility to apical dominance, whereby increasing bud fruitfulness. Do not tank mix with other products except up to 0.5% v/v of a non-ionic surfactant. Yield may be reduced if applied less than four weeks prior to natural budbreak.

For earlier than normal budbreak, make the application earlier than four weeks prior to normal budbreak. To limit drift, use a coarse droplet nozzle. The nozzle pressure must not exceed 40 psi. Apply as a spray to wet application.

Some yellowing on the first leaves may appear but the developing growth will be normal. The user should be aware that growing buds and shoots are susceptible to frost and may be killed or damaged by freezing temperatures which should be taken into account in determining whether or not to make an early application of Longhorn™.

USE RESTRICTIONS:

DO NOT exceed 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) per acre per application.

DO NOT use more than 3.85 gallons of Longhorn™ (17.52 lbs. hydrogen cyanamide) per acre per year.

DO NOT exceed 100 gallons of total spray per acre.

Make only one application per year

DO NOT tank mix with other materials except as listed above.

PEACHES/NECTARINES (Not for use in California) – Use Longhorn™ for more uniform natural budbreak, earlier budbreak leading to sharper bloom, more uniform maturity or earlier maturity. Apply 1-1.4 gallons Longhorn™ (4.55 – 6.37 lbs. hydrogen cyanamide) in no more than 200 gallons spray per acre with a nonionic surfactant not to exceed 0.5% v/v after all pruning activities are completed. Make applications 30 or more days prior to normal budbreak. Applications made less than 30 days prior to normal budbreak may result in reduced yield. In some areas, it may be possible to use lower rates if it is possible to closely monitor the accumulation of chill hours. If application rate is too low and made

too close to normal budbreak, no results may occur.

Spray according to the anticipated budbreak timing of the earliest variety within an interplanted orchard, unless each variety can be sprayed separately without significant drift or over-spray contacting previously sprayed varieties or nontarget varieties.

Longhorn™ is a budbreak stimulant and will promote more uniform and/or earlier budbreak even when the maximum chill hour requirements are met. Longhorn™ is not a substitute for chill hours however; a 1.4 gallon rate will stimulate growth following a minimum amount of chilling (approximately 300-500 chill hours based on the threshold temperature of 43°F to 45°F).

Use of Longhorn™ on any orchard historically damaged by frost, such as in Southeastern states must be done with the knowledge that Longhorn™ treated trees are equally as frost sensitive as non-treated trees. If Longhorn™ is used to start growth even a few days early, resulting flowers and/or fruit can be subject to frost damage.

Note to User: Application at rates in excess of those stated above may reduce emergence of primary buds, causing secondary bud growth that can reduce yield in the immediate crop cycle.

USE RESTRICTIONS:

DO NOT exceed 1.4 gallons of Longhorn™ (6.37 lbs. hydrogen cyanamide) per acre per application.

DO NOT use more than 1.4 gallons of Longhorn™ (6.37 lbs. hydrogen cyanamide) per acre per year.

DO NOT exceed 200 gallons of total spray per acre.

Make only one application per year

DO NOT tank mix with other materials except as listed above.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

PESTICIDE STORAGE: Store under cool conditions not to exceed 68°F (20°C). Do not store in direct sunlight.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL:

5-gallon containers: Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling, if available. Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

15-gallon containers: Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling, if available. Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

55-gallon containers: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

IMPORTANT: READ BEFORE USE

Read the entire Directions for Use, Conditions of Warranties and Limitations of Liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following Conditions, Disclaimer of Warranties and Limitations of Liability.

CONDITIONS: The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of HERITAGE CROP SCIENCE, LLC. All such risks shall be assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: To the extent consistent with applicable law, HERITAGE CROP SCIENCE, LLC makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label. No agent of HERITAGE CROP SCIENCE, LLC is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, HERITAGE CROP SCIENCE, LLC disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

LIMITATIONS OF LIABILITY: To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use or handling of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid or at HERITAGE CROP SCIENCE, LLC's election, the replacement of product.

[EPA Approved *approval date*]